AMENDMENTS TO THE CLAIMS

Please amend claims 1-28 as follows:

1. (Currently Amended) A method for robustly producing a motion compensated interpolation video frame, the method comprising:

constructing N motion compensated interpolated frames between two existing frames F1 and F2, wherein N comprises an integer with a value of at least 2; and

~~fusing the N motion compensated interpolated frames into a single motion compensated interpolated frame.~~

generating a final motion compensated interpolated frame by, for each pixel (x, y) in the final motion compensated interpolated frame:

determining one corresponding pixel from each of the N motion compensated interpolated frames, for a total of N corresponding pixels;

selecting one pixel of the N corresponding pixels; and

setting the pixel (x, y) to the selected pixel.

2. (Currently Amended) The method of claim 1 wherein constructing each of the N motion compensated interpolated frames between the two existing frames F1 and F2 ~~further~~ comprises:

selecting a first set of pixels in F1, wherein the pixel sets selected for each of the N motion compensated frames varies;

selecting a corresponding second set of pixels in F2, wherein the corresponding pixel sets selected for each of the N motion compensated frames varies;

generating a first mesh for the first set of pixels and a second mesh for the second set of pixels;

estimating a first flow of motion from the first set of pixels to the second set of pixels, and a second flow of motion from the second set of pixels to the first set of pixels;

generating a first motion compensated mesh based on the first mesh and the first estimated flow of motion, and a second motion compensated mesh based on the second mesh and the second estimated flow of motion;

computing a first warped image by warping F1 using the first mesh and the first motion compensated mesh, and a second warped image by warping F2 using the second mesh and the second motion compensated mesh; and

linearly ~~combing~~ combining the first warped image and the second warped image.

3. (Currently Amended) The method of claim 2 wherein selecting a set of pixels in a frame ~~further~~ comprises:

classifying some pixels in the frame as having high spatial frequency contents; and

selecting the classified pixels, wherein the specific classification criteria is different for each of the N motion compensated frames.

4. (Currently Amended) The method of claim 2 wherein generating a mesh for a set of pixels ~~further~~ comprises:

fitting a polygonal mesh to the set of pixels.

5. (Currently Amended) The method of claim 4 wherein fitting [[a]] the polygonal mesh to [[a]] the set of pixels ~~further~~ comprises:

applying a Delaunay triangulation to the set of pixels, using edges of the associated frame as imposed boundaries.

6. (Currently Amended) The method of claim 2 wherein estimating a flow of motion between two sets of pixels ~~further~~ comprises:

applying an optical flow constraint equation to the first set of pixels, the optical flow constraint equation comprising x * u + y * v + t = 0, wherein u and v are unknown components of the flow and x, y and t stand for differentiation.

7. (Currently Amended) The method of claim 1 wherein ~~fusing the N motion compensated interpolated frames into a single, motion compensated interpolated frame further comprises:~~ the selected pixel is color nearest a pixel (x', y'), where the pixel (x', y') is produced by

~~for each pixel x, y in a final fused motion compensated interpolated frame:~~

applying a scalar median filter componentwise to [[a]] the corresponding pixel in each of the N motion compensated interpolated frames ~~1 - N~~ 1 to N to produce a resulting pixel x', y'; ~~and~~

~~setting x, y to a corresponding pixel from a one of the N motion compensated interpolated frames that is color nearest to x', y'.~~

8. (Currently Amended) A computer readable medium ~~containing~~ encoded with a computer program product for robustly producing a motion compensated interpolation video frame, the computer program product comprising:

program code for constructing N motion compensated interpolated frames between two existing frames F1 and F2, wherein N comprises an integer with a value of at least 2; and

~~program code for fusing the N motion compensated interpolated frames into a single motion compensated interpolated frame.~~

program code for generating a final motion compensated interpolated frame by,

for each pixel (x, y) in the final motion compensated interpolated frame:

determining one corresponding pixel from each of the N motion compensated interpolated frames, for a total of N corresponding pixels;

selecting one pixel of the N corresponding pixels; and

setting the pixel (x, y) to the selected pixel.

9. (Currently Amended) The computer readable medium of claim 8 wherein the program code for constructing each of the N motion compensated interpolated frames between the two existing frames F1 and F2 ~~further~~ comprises:

program code for selecting a first set of pixels in F1, wherein the pixel sets selected for each of the N motion compensated frames varies;

program code for selecting a corresponding second set of pixels in F2, wherein the corresponding pixel sets selected for each of the N motion compensated frames varies;

program code for generating a first mesh for the first set of pixels and a second mesh for the second set of pixels;

program code for estimating a first flow of motion from the first set of pixels to the second set of pixels, and a second flow of motion from the second set of pixels to the first set of pixels;

program code for generating a first motion compensated mesh based on the first mesh and the first estimated flow of motion, and a second motion compensated mesh based on the second mesh and the second estimated flow of motion;

program code for computing a first warped image by warping F1 using the first mesh and the first motion compensated mesh, and a second warped image by warping F2 using the second mesh and the second motion compensated mesh; and

program code for linearly ~~combing~~ combining the first warped image and the second warped image.

10. (Currently Amended) The computer readable medium of claim 9 wherein the program code for selecting a set of pixels in a frame ~~further~~ comprises:

program code for classifying some pixels in the frame as having high spatial frequency contents; and

program code for selecting the classified pixels, wherein the specific classification criteria is different for each of the N motion compensated frames.

11. (Currently Amended) The computer readable medium of claim 9 wherein the program code for generating a mesh for a set of pixels ~~further~~ comprises:

program code for fitting a polygonal mesh to the set of pixels.

12. (Currently Amended) The computer readable medium of claim 11 wherein the program code for fitting [[a]] the polygonal mesh to [[a]] the set of pixels ~~further~~ comprises:

program code for applying a Delaunay triangulation to the set of pixels, using edges of the associated frame as imposed boundaries.

13. (Currently Amended) The computer readable medium of claim 9 wherein the program code for estimating a flow of motion between two sets of pixels ~~further~~ comprises:

program code for applying an optical flow constraint equation to the first set of pixels, the optical flow constraint equation comprising $x * u + y * v + t = 0$, wherein u and v are unknown components of the flow and x, y and t stand for differentiation.

14. (Currently Amended) The computer readable medium of claim 8 wherein ~~the program code for fusing the N motion compensated interpolated frames into a single, motion compensated interpolated frame further comprises:~~ the selected pixel is color nearest a pixel (x', y'), where the pixel (x', y') is produced by

~~program code for, for each pixel x, y in a final fused motion compensated interpolated frame:~~

applying a scalar median filter componentwise to [[a]] the corresponding pixel in each of the N motion compensated interpolated frames ~~1-N to produce a resulting pixel x', y'; and~~

~~setting x, y to a corresponding pixel from a one of the N motion compensated interpolated frames that is color nearest to x', y'~~.

15. (Currently Amended) A computer system for robustly producing a motion compensated interpolation video frame, the computer system comprising:

means for constructing N motion compensated interpolated frames between two existing frames F1 and F2, wherein N comprises an integer with a value of at least 2; and

~~means for fusing the N motion compensated interpolated frames into a single motion compensated interpolated frame.~~

means for generating a final motion compensated interpolated frame by, for each pixel (x, y) in the final motion compensated interpolated frame:

determining one corresponding pixel from each of the N motion compensated interpolated frames, for a total of N corresponding pixels;

selecting one pixel of the N corresponding pixels; and

setting the pixel (x, y) to the selected pixel.

16. (Currently Amended) The computer system of claim 15 wherein the means for constructing each of the N motion compensated interpolated frames between the two existing frames F1 and F2 ~~further~~ comprises:

means for selecting a first set of pixels in F1, wherein the pixel sets selected for each of the N motion compensated frames varies;

means for selecting a corresponding second set of pixels in F2, wherein the corresponding pixel sets selected for each of the N motion compensated frames varies;

means for generating a first mesh for the first set of pixels and a second mesh for the second set of pixels;

means for estimating a first flow of motion from the first set of pixels to the second set of pixels, and a second flow of motion from the second set of pixels to the first set of pixels;

means for generating a first motion compensated mesh based on the first mesh and the first estimated flow of motion, and a second motion compensated mesh based on the second mesh and the second estimated flow of motion;

means for computing a first warped image by warping F1 using the first mesh and the first motion compensated mesh, and a second warped image by warping F2 using the second mesh and the second motion compensated mesh; and

means for linearly ~~combing~~ combining the first warped image and the second warped image.

17. (Currently Amended) The computer system of claim 16 wherein the means for selecting a set of pixels in a frame ~~further~~ comprises:

means for classifying some pixels in the frame as having high spatial frequency contents; and

means for selecting the classified pixels, wherein the specific classification criteria is different for each of the N motion compensated frames.

18. (Currently Amended) The computer system of claim 16 wherein the means for generating a mesh for a set of pixels ~~further~~ comprises:

means for fitting a polygonal mesh to the set of pixels.

19. (Currently Amended) The computer system of claim 18 wherein the means for fitting [[a]] the polygonal mesh to [[a]] the set of pixels ~~further~~ comprises:

means for applying a Delaunay triangulation to the set of pixels, using edges of the associated frame as imposed boundaries.

20. (Currently Amended) The computer system of claim 16 wherein the means for estimating a flow of motion between two sets of pixels ~~further~~ comprises:

means for applying an optical flow constraint equation to the first set of pixels, the optical flow constraint equation comprising $x * u + y * v + t = 0$, wherein u and v are unknown components of the flow and x, y and t stand for differentiation.

21. (Currently Amended) The computer system of claim 15 wherein ~~the means for fusing the N motion compensated interpolated frames into a single, motion compensated interpolated frame further comprises:~~ the selected pixel is color nearest a pixel (x', y'), where the pixel (x', y') is produced by

~~means for, for each pixel x, y in a final fused motion compensated interpolated frame:~~

applying a scalar median filter componentwise to [[a]] the corresponding pixel in each of the N motion compensated interpolated frames ~~1-N to produce a resulting pixel x', y'; and~~

~~setting x, y to a corresponding pixel from a one of the N motion compensated interpolated frames that is color nearest to x', y'~~.

22. (Currently Amended) A computer system for robustly producing a motion compensated interpolation video frame, the computer system comprising a processor configured to execute a method, the method comprising:

~~a software portion configured to construct~~ constructing N motion compensated interpolated frames between two existing frames F1 and F2, wherein N comprises an integer with a value of at least 2; and

~~a software portion configured to fuse the N motion compensated interpolated frames into a single motion compensated interpolated frame.~~

generating a final motion compensated interpolated frame by, for each pixel (x, y) in the final motion compensated interpolated frame:

determining one corresponding pixel from each of the N motion compensated interpolated frames, for a total of N corresponding pixels;

selecting one pixel of the N corresponding pixels; and

setting the pixel (x, y) to the selected pixel.

23. (Currently Amended) The computer system of claim 22 wherein ~~the software portion configured to construct~~ constructing each of the N motion compensated interpolated frames between the two existing frames F1 and F2 ~~further~~ comprises:

~~a software portion configured to select~~ selecting a first set of pixels in F1, wherein the pixel sets selected for each of the N motion compensated frames varies;

~~a software portion configured to select~~ selecting a corresponding second set of pixels in F2, wherein the corresponding pixel sets selected for each of the N motion compensated frames varies;

~~a software portion configured to generate~~ generating a first mesh for the first set of pixels and a second mesh for the second set of pixels;

~~a software portion configured to estimate~~ estimating a first flow of motion from the first set of pixels to the second set of pixels, and a second flow of motion from the second set of pixels to the first set of pixels;

~~a software portion configured to generate~~ generating a first motion compensated mesh based on the first mesh and the first estimated flow of motion, and a second motion compensated mesh based on the second mesh and the second estimated flow of motion;

~~a software portion configured to compute~~ computing a first warped image by warping F1 using the first mesh and the first motion compensated mesh, and a second warped image by warping F2 using the second mesh and the second motion compensated mesh; and

~~a software portion configured to linearly combine~~ linearly combining the first warped image and the second warped image.

24. (Currently Amended) The computer system of claim 23 wherein ~~the software portion configured to select~~ selecting a set of pixels in a frame ~~further~~ comprises:

~~a software portion configured to classify~~ classifying some pixels in the frame as having high spatial frequency contents; and

selecting the classified pixels, wherein the specific classification criteria is different for each of the N motion compensated frames.

25. (Currently Amended) The computer system of claim 23 wherein ~~the software portion configured to generate~~ generating a mesh for a set of pixels ~~further~~ comprises:

~~a software portion configured to fit~~ fitting a polygonal mesh to the set of pixels.

26. (Currently Amended) The computer system of claim 25 wherein ~~the software portion configured to fit~~ fitting [[a]] the polygonal mesh to [[a]] the set of pixels ~~further~~ comprises:

~~a software portion configured to apply~~ applying a Delaunay triangulation to the set of pixels, using edges of the associated frame as imposed boundaries.

27. (Currently Amended) The computer system of claim 23 wherein ~~the software portion configured to estimate~~ estimating a flow of motion between two sets of pixels ~~further~~ comprises:

a software portion configured to apply an optical flow constraint equation to the first set of pixels, the optical flow constraint equation comprising x * u + y * v + t = 0, wherein u and v are unknown components of the flow and x, y and t stand for differentiation.

28. (Currently Amended) The computer system of claim 22 wherein ~~the software portion configured to fuse the N motion compensated interpolated frames into a single, motion compensated interpolated frame further comprises:~~ the selected pixel is color nearest a pixel (x', y'), where the pixel (x', y') is produced by

~~a software portion configured to, for each pixel x, y in a final fused motion compensated interpolated frame:~~

~~apply~~ applying a scalar median filter componentwise to [[a]] the corresponding pixel in each of the N motion compensated interpolated frames ~~1 N to produce a resulting pixel x', y'; and set x, y to a corresponding pixel from a one of the N motion compensated interpolated frames that is color nearest to x', y'~~.